

WHAT IS CLAIMED IS:

1. An optical add/drop multiplexer for adding or dropping a channel to an optical signal, comprising:
 - 5 a wavelength-division multiplexer to receive and transmit an optical signal, and a plurality of demultiplexing ports, each demultiplexing port is a path for a demultiplexed channel of the optical signal; and
 - a plurality of add/drop multiplexers, wherein respective add/drop multiplexers are connected to respective demultiplexing ports , each of the add/drop multiplexers having a
10 reflector for transmitting or reflecting an input channel, wherein each add/drop multiplexers is configured to add and/or drop a channel to/from from the wavelength-division multiplexer using the reflector.
2. The optical add/drop multiplexer of claim 1, wherein the wavelength-division
15 multiplexer is connected to an optical fiber to receive an multiplexed optical signal, and has input and output ports as a path for the multiplexed optical signal.
3. The optical add/drop multiplexer of claim 2, wherein each of the plurality of add/drop multiplexers has a plurality of ports for outputting an input channel to an adjacent
20 lower port.

4. The optical add/drop multiplexer of claim 3, wherein the optical add/drop multiplexer is connected to an optical fiber on which the multiplexed optical signal is transmitted.

5 5. The optical add/drop multiplexer of claim 4, wherein each of the add/drop multiplexers drops a channel by outputting the channel received through a third port connected to the wavelength-division multiplexer to a fourth port and outputting the channel received through the fourth channel to a fifth channel by the reflector, and adds a channel by outputting the channel received through a first port to a second port and
10 outputting the channel received through the second port to a third port by the reflector.

6. The optical add/drop multiplexer of claim 1, wherein each of the reflectors are wavelength-independent reflectors

15 7. An optical add/drop multiplexer for adding and/or dropping a channel to an optical signal, comprising:

 a first wavelength-division multiplexer for wavelength-division demultiplexing a received optical signal and providing respective demultiplexed channels to respective demultiplexing ports, each demultiplexing port corresponding to the wavelength of the
20 demultiplexed channel;

 a plurality of add/drop multiplexers, wherein respective add/drop multiplexers are connected to respective demultiplexing ports, each add/drop multiplexer having first and

second circulators and a reflector connected between the first and second circulators, for transmitting or reflecting an input channel;

a second wavelength-division multiplexer for wavelength-division multiplexing a plurality of received channels, the second wavelength-division multiplexer having a plurality of demultiplexing ports, wherein respective demultiplexing ports are connected to respective add/drop multiplexers,

wherein each add/drop multiplexer is configured to add and/or drop a channel to/from from the wavelength-division multiplexer using the first and second circulators and reflector.

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8. The optical add/drop multiplexer of claim 7, wherein the first wavelength-division multiplexer connected to an optical fiber to receive a multiplexed optical signal.

9. The optical add/drop multiplexer of claim 7, wherein each of the plurality of add/drop multiplexers has a plurality of ports for outputting an input channel to an adjacent lower port.

10. The optical add/drop multiplexer of claim 7, wherein the first circulator drops a channel by outputting the channel received through a first port connected to the first wavelength-division multiplexer to a fourth port and outputting the channel received through the second channel to a third channel by the reflector.

11. The optical add/drop multiplexer of claim 7, wherein and the second circulator adds a channel by outputting the channel received through a first port to a second port and outputting the channel received through the second port to a third port connected to the second wavelength-division multiplexer by the reflector.

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12. The optical add/drop multiplexer of claim 7, wherein each of the reflectors are wavelength-independent reflectors

13. The optical add/drop multiplexer of claim 7, wherein each of the first and
10 second wavelength-division multiplexers includes an arrayed-waveguide grating.